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EXAMINER

CERVETTI, DAVID GARCIA

ART UNIT	PAPER NUMBER
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2136

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/27/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/673,021

Applicant(s)

DE JONG, EDUARD K.

Examiner

David G. Cervetti

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-52 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>12/15/03</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-52 are pending and have been examined.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 120, 140, 115 (fig. 1); 325, 330, 335, 340, 370 (fig. 3); 510 (fig. 5B), etc. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "218" has been used to designate both "numeric keyboard" and "alphanumeric keyboard" (fig. 2); reference character "485" has been used to designate both "obfuscation descriptor" and "virtual machine" (fig. 4); etc. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to

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the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. **This is not intended to be a complete list of objections to the drawings.**

Applicant is required to review and correct the drawings to place them in compliance.

Specification

5. The disclosure is objected to because of the following informalities: the reference to application numbers provided in page 2 needs to be updated to reflect applications that have matured into patents. Appropriate correction is required.

6. The disclosure is objected to because of the following informalities: "ATM" (page 18). These terms have not been defined. Appropriate correction is required.

Claim Objections

7. Claim 25 is objected to because of the following informalities: "the method of claim 14", perhaps "the program storage device of claim 14 wherein said method" was intended. Appropriate correction is required.

Double Patenting

8. Claims 1-52 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-77 of copending Application No. 10/672,836. Although the conflicting claims are not identical, they are not patentably distinct from each other because the subject matter claimed in the instant application is also claimed in the referenced copending application.

9. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

10. The subject matter claimed in the instant application is fully claimed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows:

- the instant application claims a method for executing an obfuscated application program, the method comprising:
 - o receiving an application program that comprises application program instructions and application program data;
 - o determining an application program instruction location permutation to apply to a current instruction counter value;
 - o determining an application program data location permutation to apply to a current data location counter value;
 - o receiving said current instruction counter value;

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- applying said application program instruction location permutation to said current instruction counter value to obtain a first reference to an application program instruction in an instruction stream to execute;
 - **if said application program instruction references application program data, applying said application program data location permutation to data referenced by said application program instruction to obtain a second reference to data to access, said data to access interleaved with application program instructions in said instruction stream; and**
 - executing said application program instruction (claim 1).
- the copending application claims a method for executing an obfuscated application program, the method comprising:
- receiving an application program comprising application program data and application program instructions;
 - determining an application program instruction location permutation to apply to a current instruction counter value;
 - receiving said current instruction counter value;
 - applying said application program instruction location permutation to said current instruction counter value to obtain a reference to an application program instruction to execute; and
 - executing said application program instruction to execute (claim 1).

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11. Claims 1-52 of the instant application are envisioned by copending Application No. 10/672,836's claims 1-77 in that claims 1-77 of the copending application contain all the limitations of claims 1-52 of the instant application. Claims 1-52 of the instant application therefore are not patently distinct from the copending application claims and as such are unpatentable for obvious-type double patenting because it would have been obvious to do the obfuscation in copending application conditional to some event, as further claimed in dependent claim 8 of copending application.

12. Claims 1-52 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-63 of copending Application No. 10/672,700. Although the conflicting claims are not identical, they are not patentably distinct from each other because the subject matter claimed in the instant application is also claimed in the referenced copending application.

13. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

14. The subject matter claimed in the instant application is fully claimed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows:

- the instant application claims a method for executing an obfuscated application program, the method comprising:
 - o receiving an application program that comprises application program instructions and application program data;

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- determining an application program instruction location permutation to apply to a current instruction counter value;
 - determining an application program data location permutation to apply to a current data location counter value;
 - receiving said current instruction counter value;
 - applying said application program instruction location permutation to said current instruction counter value to obtain a first reference to an application program instruction in an instruction stream to execute;
 - if said application program instruction references application program data, applying said application program data location permutation to data referenced by said application program instruction to obtain a second reference to data to access, said data to access interleaved with application program instructions in said instruction stream; and
 - executing said application program instruction (claim 1).
- the copending application claims a method for executing an obfuscated application program, the method comprising:
- receiving an obfuscated application program, said obfuscated application program comprising at least one instruction opcode value encoded using one of a plurality of instruction set opcode value encoding schemes;

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- determining a dispatch table associated with said application program, said dispatch table corresponding to said one of a plurality of instruction set opcode value encoding schemes; and
- executing said application program using said associated dispatch table (claim 1).

15. Claims 1-52 of the instant application are envisioned by copending Application No. 10/672,700's claims 1-63 in that claims 1-63 of the copending application contain all the limitations of claims 1-52 of the instant application. Claims 1-52 of the instant application therefore are not patently distinct from the copending application claims and as such are unpatentable for obvious-type double patenting because it would have been obvious to do the obfuscation in copending application conditional to some event and/or using a table to select/permute instructions.

16. Claims 1-52 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-48 of copending Application No. 10/672,183. Although the conflicting claims are not identical, they are not patentably distinct from each other because the subject matter claimed in the instant application is also claimed in the referenced copending application.

17. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

18. The subject matter claimed in the instant application is fully claimed in the referenced copending application and would be covered by any patent granted on that

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copending application since the referenced copending application and the instant application are claiming common subject matter, as follows:

- the instant application claims a method for executing an obfuscated application program, the method comprising:
 - o receiving an application program that comprises application program instructions and application program data;
 - o determining an application program instruction location permutation to apply to a current instruction counter value;
 - o determining an application program data location permutation to apply to a current data location counter value;
 - o receiving said current instruction counter value;
 - o applying said application program instruction location permutation to said current instruction counter value to obtain a first reference to an application program instruction in an instruction stream to execute;
 - o if said application program instruction references application program data, applying said application program data location permutation to data referenced by said application program instruction to obtain a second reference to data to access, said data to access interleaved with application program instructions in said instruction stream; and
 - o executing said application program instruction (claim 1).
- the copending application claims a method for executing an obfuscated application program, the method comprising:

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- receiving an obfuscated application program, said obfuscated application program comprising at least one instruction opcode value encoded using one of a plurality of instruction set opcode value encoding schemes;
- receiving an application program instruction corresponding to a current instruction counter value;
- selecting an instruction dispatch table based at least in part on said current instruction counter value; and
- executing said application program instruction using said selected instruction dispatch table (claim 1).

19. Claims 1-52 of the instant application are envisioned by copending Application No. 10/672,183's claims 1-48 in that claims 1-48 of the copending application contain all the limitations of claims 1-52 of the instant application. Claims 1-52 of the instant application therefore are not patently distinct from the copending application claims and as such are unpatentable for obvious-type double patenting because it would have been obvious to do the obfuscation in copending application conditional to some event and/or using a table to select/permute instructions.

Claim Rejections - 35 USC § 101

20. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

21. Claims 14-26 rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Independent claims 14 and 20 recite "a

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program storage device readable by a machine, embodying a program of instructions executable by the machine to perform a method” is considered non-statutory subject matter since “embodying a program of instructions executable by the machine” can broadly be interpreted as a listing of the code and not necessarily the executable form. Claims 15-19 and 21-26 are rejected based on their dependency from independent claims 14 and 20.

Claim Rejections - 35 USC § 102

22. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

23. **Claims 1, 3-7, 9-12, 14, 16-20, 22-25, 27, 29-33, 35-38, 40, 42-46, and 48-51 are rejected under 35 U.S.C. 102(e) as being anticipated by Kiddy (US Patent 6,694,435).**

Regarding claims 1, 14, 27, and 40, Kiddy teaches

- receiving an application program that comprises application program instructions and application program data (**col. 5, lines 5-25**);
- determining an application program instruction location permutation to apply to a current instruction counter value (**col. 5, lines 45-67**);

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- determining an application program data location permutation to apply to a current data location counter value; receiving said current instruction counter value (**col. 5, lines 45-67**);
- applying said application program instruction location permutation to said current instruction counter value to obtain a first reference to an application program instruction in an instruction stream to execute (**col. 6, lines 1-47**);
- if said application program instruction references application program data, applying said application program data location permutation to data referenced by said application program instruction to obtain a second reference to data to access, said data to access interleaved with application program instructions in said instruction stream (**col. 6, lines 65-67, col. 7, lines 1-30**); and
- executing said application program instruction (**col. 7, lines 13-30**).

Regarding claims 7, 20, 33, and 46, Kiddy teaches

- reading a first application program comprising application program instructions and application program data (**col. 5, lines 5-25**);
- determining an application program instruction location permutation that transforms said first application program into an obfuscated application program, said obfuscated application program having at least one application program instruction stored at a memory location that is based at least in part on a permutation of the memory location where the

- corresponding application program instruction is stored in said first application program (**col. 5, lines 45-67**);
- determining a first instruction location of said first application program (**col. 5, lines 45-67**);
 - determining an application program data location permutation that transforms said first application program into an obfuscated application program, said obfuscated application program having at least one application program datum stored at a memory location that is based at least in part on a permutation of the memory location where the corresponding application program datum is stored in said first application program (**col. 5, lines 45-67, col. 6, lines 1-47**);
 - determining a first data location of said first application program (**col. 5, lines 45-67**);
 - applying said application program instruction location permutation and said application program data location permutation to said first application program to create an obfuscated application program comprising an instruction stream having application program data interspersed with application program instructions (**col. 6, lines 1-47**); and
 - sending said obfuscated application program (**col. 7, lines 13-30**).

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Regarding claims 3, 9, 16, 22, 29, 35, 42, and 48, Kiddy teaches wherein at least some of said data to access is formatted to appear like one or more valid instructions (**col. 5, lines 35-67**).

Regarding claims 4, 10, 17, 23, 30, 36, 43, and 49, Kiddy teaches wherein at least some of said data to access comprises randomized data (**col. 5, lines 35-67**).

Regarding claims 5, 11, 18, 24, 31, 37, 44, and 50, Kiddy teaches wherein said randomized data is formatted to appear like one or more valid instructions (**col. 5, lines 35-67**).

Regarding claims 6, 19, 32, and 45, Kiddy teaches determining whether there is another application program instruction to be executed; advancing said current instruction counter if there is another application program instruction to be executed; and repeating said receiving, said applying and said executing after said advancing (**col. 5, lines 45-67**).

Regarding claims 12, 25, 38, and 51, Kiddy teaches receiving an application program request from a user device, said determining occurring in response to said receiving (**col. 6, lines 15-65**).

Claim Rejections - 35 USC § 103

24. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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25. Claims 2, 8, 13, 15, 21, 26, 28, 34, 39, 41, 47, and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kiddy, and further in view of Drake (US Patent 6,006,328).

Regarding claims 2, 8, 15, 21, 28, 34, 41, and 47, Kiddy does not expressly disclose using encryption. However, Drake teaches wherein said application program data comprises at least one cryptographic key for use in decrypting data (**col. 4, lines 40-67, col. 5, lines 1-35**). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use encryption with the system of Kiddy. One of ordinary skill in the art would have been motivated to perform such a modification to provide further security to the application (Drake, summary).

Regarding claims 13, 26, 39, and 52, Kiddy does not expressly disclose using encryption. However, Drake teaches after said applying said application program instruction location permutation and said application program data location permutation, applying a cryptographic process to said obfuscated application program together with a cryptographic key to create an encrypted obfuscated application program; and said sending comprises sending said encrypted obfuscated application program (**fig. 6, col. 4, lines 40-67, col. 5, lines 1-35, col. 16, lines 1-67**). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use encryption with the system of Kiddy. One of ordinary skill in the art would have been motivated to perform such a modification to provide further security to the application (Drake, summary).

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Conclusion


26. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David G. Cervetti whose telephone number is (571) 272-5861. The examiner can normally be reached on Monday-Friday 7:00 am - 5:00 pm, off on Wednesday.

27. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nasser G. Moazzami can be reached on (571) 272-4195. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

28. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DGC

NASSER MOAZZAMI
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2/22/07